

# Poverty and Disability: Trapped in a Web of Causation

By

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People with disabilities tend to be among the most socially and economically marginalized populations wherever they exist. Disability and poverty tend to go hand in hand, forming a cycle of cumulative causation (Acton 1983, 79). Disabled people are more likely to be poor than their non-disabled peers, and people living in poverty are more likely to become disabled than those who are not (Elwan 1999,i). Most international aid agencies and scholars agree that poverty and disability are causally intertwined.

Some of the main factors generating this relationship (in addition to the capacity limitations imposed by the impairments themselves) are the inappropriately limited expectations and self-reinforcing combinations of social and economic discrimination, inaccessible built environments and expensive, socially isolating, and counterproductive disability policies and institutions typically faced by people with disabilities. As a result, they are often denied access to educational and employment opportunities, and are, therefore, commonly forced to depend on others in their families and communities for assistance and economic support. Consequently, disabled people, irrespective of their economic environments, tend to have a higher than average likelihood of living in poverty.

Poverty tends to increase the incidence and prevalence of disability by limiting access to health care, adequate nutrition and safe working environments, resulting in an increased risk of illness and injury. Poor nutrition and poor sanitation alone, for example, are estimated to cause impairments in over 100 million people worldwide (Lee 1999). Poverty and disability exist in a two-way relationship, where disability increases the risk of poverty, and conditions of poverty increase the risk of disability.

Although disability statistics are notoriously unreliable, aid agencies typically estimate that people with disabilities make up approximately 10% of any country's population, and that people with disabilities represent over twenty percent of the world's poor. Therefore, mitigating the negative consequences of the two-way relationship between disability and poverty is increasingly recognized to be a necessary component of any successful poverty eradication strategy. No poverty program can be effective if it ignores its poorest minority, and no disability program will be successful if it ignores the conditions faced by most disabled people. According to the World Bank (2005), failure to account for differences in functionality when developing programs and strategies "can seriously limit the effectiveness of programs designed to promote economic and social well-being."

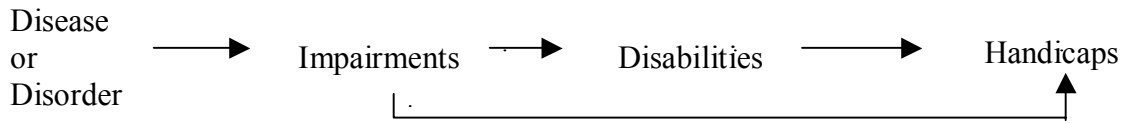
## THE CURRENT UNDERSTANDING OF DISABILITY

A disability is a restriction of a person's ability to perform a normal human activity, and is, therefore, a composite function of both the nature of the underlying impairment and the social context in which the person with the impairment exists (Whyte and Ingsand 1995; Barnes 1997; Harris-White 1996, 3). With the introduction of the International Classification of Impairments, Disabilities and Handicaps (ICIDH), the World Health

Organization (WHO 1980, 8) created the first model of disablement to embody this understanding by extending the conceptual framework beyond a simple medical classification, to include systematic, causal relations between personal, social and environmental factors. The ICIDH created the foundation for the first world-wide efforts to statistically estimate disability populations.

Figure 1

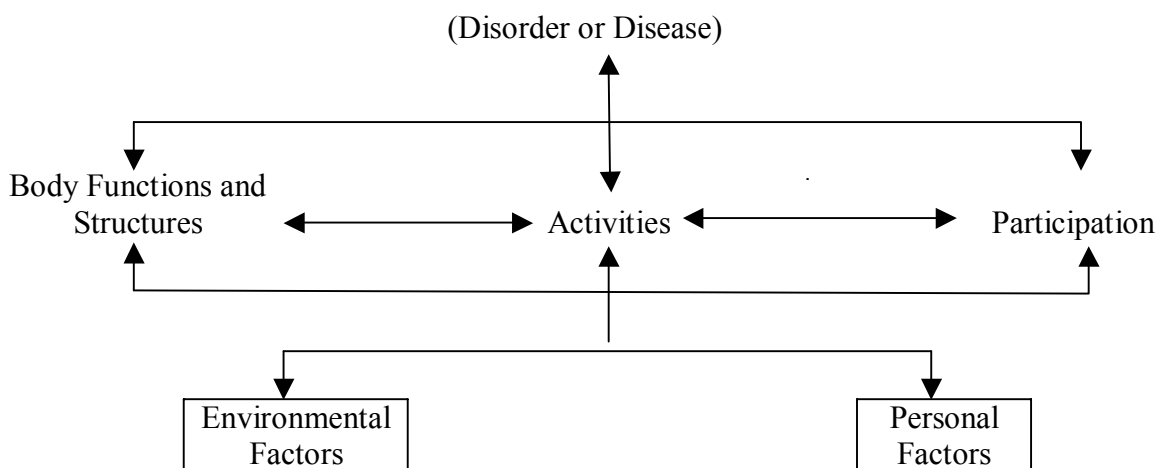
The Disablement Phenomena as Conceptualized in the Original ICIDH



Source: World Health Organization, ICIDH-2, 11.

Within the ICIDH framework, as depicted in Figure 1, the umbrella concept of disablement is comprised of three specific elements; impairments, disabilities, and handicaps; which are linked as both causes and consequences of each other. A disability is a restriction or lack of ability to perform an activity in a manner or within a range considered normal for a human being. Disabilities are caused by impairments, which are losses or abnormalities of psychological, physiological or anatomical structure or function. Handicaps are disadvantages caused by impairments and disabilities that limit or prevent the fulfillment of a role that is considered to be normal depending on age, sex and social and cultural factors. Impairments and disabilities are, therefore, limitations imposed upon individuals by their own bodies, while handicaps are additional disadvantages imposed on people with impairments and disabilities by their environments, cultures, societies and institutions.

Figure 2  
Interactions Between the Components of the ICF  
Health Condition



Source: World Health Organization, ICF, 18.

In order to incorporate subsequent improvements in the understanding of the interactions between the personal, social and environmental elements of disability, the WHO engaged in a process that led to the replacement of the ICIDH with the International Classification of Functioning, Disability and Health (ICF).

Within this framework, depicted in Figure 2, health conditions are disorders or diseases, body structures are the anatomical parts of the body and body functions are the physiological functions of body systems. An activity is defined as the execution of a task or action by an individual, and participation is defined as involvement in a life situation. Environmental factors comprise the physical, social and attitudinal environments in which people live and conduct their lives, and personal factors include gender, race, age, fitness, lifestyle, habits, upbringing, coping styles, social background, education, profession and a variety of other possible characteristics of individuals.

A person's functioning at the level of the body, therefore, and his or her ability to execute tasks (activities) and/or participate in life situations, are all functions of complex relationships between health conditions and personal and environmental factors.

Therefore, people may:

- Have impairments without capacity limitations (e.g. a disfigurement in leprosy may have no effect on a person's capacity);
- Have performance problems and capacity limitations without evident impairments (e.g. reduced performance in daily activities associated with many diseases);
- Have performance problems without impairments or capacity limitations (e.g. an HIV-positive individual, or an ex-patient recovered from mental illness, facing stigmatization or discrimination in interpersonal relations or work);
- Have capacity limitations without assistance, and no performance problems in the current environment (e.g. an individual with mobility limitations may be provided by society with assistive technology to move around);
- Experience a degree of influence in a reverse direction (e.g. lack of use of limbs can cause muscle atrophy; institutionalization may result in loss of social skills (Winzer 1993, 22)).

#### OBSTACLES TO CONSTRUCTING A MODEL OF DISABILITY AND POVERTY:

Although Development and Epidemiology texts occasionally make note of the webs of causation that bind poverty and disability in developing countries, there appears to have been little or no systematic examination of the causal links. Little effort has been expended on research into disability in developing countries, and statistical information is limited. Most of the available information in this area consists of anecdotal evidence and case studies (Elwan 1999, 2). While there is general agreement that a vicious cycle appears to exist between poverty and disability, no encompassing model of the underlying causes has been developed.

The complex nature of disability makes quantification and statistical analysis very difficult. Disability survey data tend to be unsuitable for cross-survey comparison because the sizes of disability populations and the severities of disabilities recorded depend on underlying social and environmental contexts. Elwan (1999, iii) has found that differences in disability definitions, information collection methodologies and capacities for diagnosis cause significant variations and inaccuracies. The design of survey questions has also proven to be very subjective, tending to be based on preconceived attitudes toward disability.

Disability is also inherently difficult to observe, as cultural issues like stigma and prejudice adversely affect disability surveys and statistics. Disabled people are often described as invisible in sociological studies (Harriss-White 1996, 3) because households often restrict the participation of their disabled family members in community activities, and often fail to reveal disabled family members to surveyors (Yeo and Moore 2003, 577; Thomas 2004, 16).

## THE RESEARCH

Cumulative causation is fundamental to the determination of the interactions between disability and poverty. Therefore, a model of such interactions must identify the linkages between the medical causes of impairments and the existing social and environmental contexts and poverty. Unfortunately, it is impossible at present to compare theoretical models and computer simulations to accurate, reliable data. Consequently, substantiation of such a model must rest on a comparison of the model's structure with the actual decision rules of the system's participants (Sterman 1991, 218). Every effort must be made to include their individual sets of decision rules if the model is to be an accurate description of the system (Roberts et al. 1994, 7; Randers 1980, 137). Once established, the model can be further validated by comparing it to the academic literature on disability and poverty theory.

In this article, the authors use systems analysis to develop a theory of the causal connections between disability and poverty. The model was developed using primary data retrieved directly from the participants in the system. To ensure an un-biased, well-developed model, it was necessary to include as many diverse perspectives on the system as possible. To do this, the author's assembled a representative panel of experts on disability and poverty from international, national, and non-governmental organizations, and surveyed them via email.

For the model to be manageable enough to advance beyond conceptualization, the panel had to arrive at a consensus on the necessary dynamic factors they experience. To achieve such a synthesis of opinion for this research, the authors have employed the Delphi method, a survey technique developed by the Rand Corporation in the 1950s, to generate reliable forecasts of unknown or hypothetical events by collecting and synthesizing the judgments of panels of experts with differing expertise and vested interests. The desired synthesis is achieved through a series of rigorous questionnaires, each followed by controlled opinion feedback (Dakley and Helmer 1963, 458). Delphi questionnaires are designed to develop individual expert's responses and to enable the experts to refine their views throughout the timeline of the survey. In each succeeding

round of questionnaires, the variance among responses decreases and the median response moves toward what is deemed the “correct” answer (Lourdes 2005, 687).

The first stage of the survey consisted of five questions. The respondents were first asked for their opinions on the primary causes of disability and the primary causes of poverty. They were then asked for their opinions on the causal connections between poverty and disability. Then respondents were asked for two sets of policy suggestions, one for combating disability and one for combating poverty. The answers to the policy questions were used to corroborate the structure of the model by determining if the policy conclusions drawn from the model matched the policy suggestions contributed by the panel. It was assumed that the more closely that the panel’s policy suggestions focused on the factors suggested by the model, the more closely the structure of the model reflected reality.

In the second stage of the Delphi process, the answers to the first stage questions were aggregated and fed back to the respondents, who were asked to rank the now anonymous lists of opinions about poverty and disability. This provided them with the opportunity to examine the opinions of the other respondents without having to reveal their own opinions, and, through their ranking of the list, to reevaluate their own ideas (Cuhls 2001). These rankings were averaged and ranked again, resulting in a consensus of opinion on each of the questions.

The decision rules governing the poverty/disability system were modeled by identifying the causal elements in each response to the first three questions, mapping the decision rules and creating a specific model for each element. The decision rules suggested by every successive response were included into their component models, and then examined against the literature and decision rule maps from the other component models. This iterative process created a total of 14 component models, which were then aggregated into a composite model comprising all of the identified interactions between poverty and disability.

## THE RESULTS

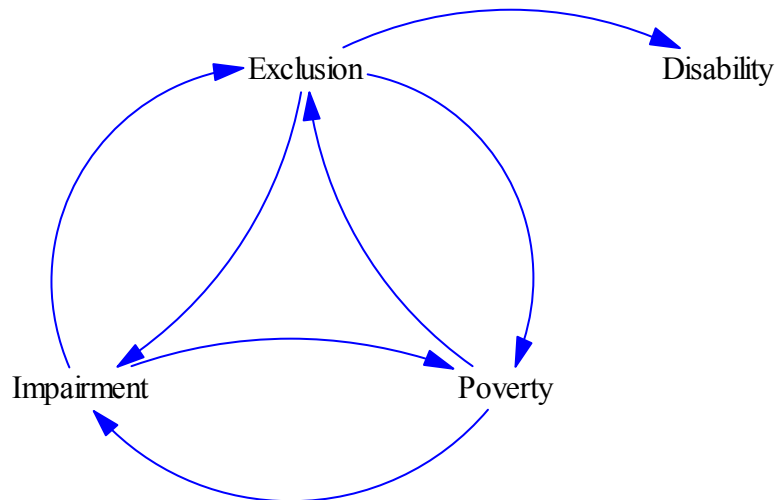
Due to the complexity of the overall model (Figure 4), differing levels of aggregation are necessary to effectively expose the underlying relationships. A highly aggregated model is presented in Figure 3 to display the cycle of cumulative causation between impairment, exclusion, poverty, and disability. This relationship is explained conceptually through a simple positive feedback model, with the interactions between poverty, disability, and exclusion represented by the following three feedback loops.

*Impairment and Poverty:* Almost by definition, those living in poverty tend to have limited access to adequate health care, food, education, shelter, and employment, and they often endure hazardous working conditions and have little or no enforcement of their civil rights or access to justice and/or the rule of law. All of these factors increase the risk of illness, injury, and impairment, while simultaneously reducing access to medical care.

The more impaired an individual, the less functional he or she may be, and the fewer may be the income-generating opportunities that are available. Also, if medical care is available, then the greater the impairment, the greater effect the costs of rehabilitation

have upon income. The greater one's poverty, the less one can spend on prevention of impairment and on its treatment, thus increasing the risk of permanent impairment.

Figure 3



*Poverty and Exclusion:* Exclusion from society is a defining characteristic of poverty, and its causal effects stem from a variety of factors: lack of access to public services and infrastructure, including, education, employment opportunities, local governance and legal system, etc. Inasmuch as they are excluded from mainstream social, economic, and political opportunities throughout their lives, disabled people (and their households) are frequently forced into the ranks of the chronic poor (Hulme, Moore, and Shepherd 2001, 9; Eyben and Ferguson 2000, 13).

Poverty, in turn, leads to exclusion through a variety of social factors. The idea that symptoms of poverty promote prejudice finds support in Gunnar Myrdal's *An American Dilemma* (1944), which presents an analysis of the causal connections between the poverty and prejudice experienced by the African-American population in the United States. The cumulative causation described by Myrdal mirrors the relationship between the poverty of people with disabilities and the social stigmatization and discrimination they tend to face. The greater the prejudice toward disabled people, the fewer the opportunities they have to earn a living, and the poorer and more destitute they become, thus reinforcing the prejudice and stigmatization.

*Exclusion and Impairment:* At all ages, and in all environments, positive feedback loops exist between stigma, exclusion, and impairment. UNESCO studies estimate that 98% of impaired children in developing countries are denied formal education (Hegarty 1995). Impaired children who do acquire an education often receive inferior treatment, have low expectations of themselves, experience low expectations from others, and fail to get the support they need to participate equally (Elwan 1999, 12). Impaired children that survive early and persistent discrimination are at a great disadvantage as they grow up, having been excluded from formal and informal education. As adults, discrimination also tends to exclude them from employment and income-earning opportunities, forcing them into poverty (Hoogeveen 2005, 610; Tudawe 2001; World Bank 2005, 3; Lwanga-Ntale 2003,

7). This initial exclusion and stigma creates a cycle of exclusion that can follow disabled people throughout their lives.

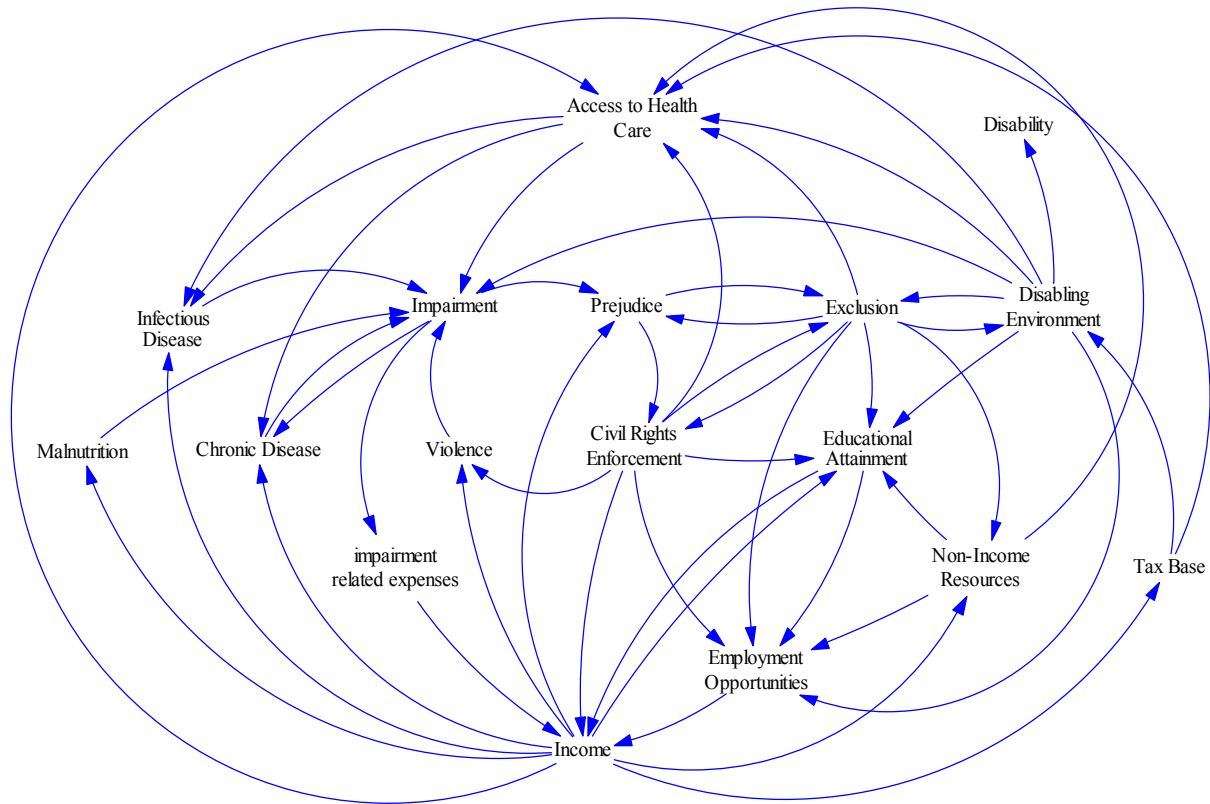
Discrimination can also be causally linked to increased risk of further impairment. Exclusion from public infrastructure tends to limit the availability of sanitation, clean water, electricity, and health care services. These limitations tend to increase the risk of impairment, creating a mutually reinforcing cycle (Yeo and Moore 2003, 572).

It is important to note that impairment does not lead directly to disability. Impairment only becomes a disability in a specific social context (often because society does not respect the needs and the rights of citizens living with impairment). Exclusion mutes the collective ability of disabled populations to express their needs, and thus allows society to design physical and social environments where impairments become disabilities. The long run result has been the establishment of institutions, attitudes, and environments that unnecessarily restrict people with impairments. The extent of a person's disability, therefore, may not necessarily be a natural consequence of his or her impairment, but may be instead be exacerbated by exclusion or a sole consequence of exclusion. This finding is supported by work of the ILO (2002), which asserts, among other things, that "the lack of mobility or the inability to speak or to see was not a disability, the lack of education and vocational training certainly is." Since exclusion is the primary link between impairment and disability, further analysis of the model could suggest that exclusion is also the primary mechanism connecting causal elements of impairment and poverty.

This highly aggregated model cannot, however, conclusively confirm that exclusion is the critical element that binds poverty to disability because it does not describe the relative power of each of the feedback loops. Any one of the loops could dominate the dynamic tendencies of the system. The high level of aggregation makes the model too simple to reveal the relative influences of each of the loops because each loop is made up of many underlying feedback loops containing many causal elements.

The complete model, depicted in Figure 4, is the combination of all of the component models plus small additions developed from the authors' analysis of the medical causes of disability. Assuming that there are no drastic variations in loop strengths, the structure of the feedback loops in this complete model reveals that exclusion is the most influential causal element in the system. The links connected to exclusion are comprised of many more positive feedback loops than the links between impairment and poverty, suggesting that exclusion dominates the system because it is re-enforced many more times, and through many more positive feedback loops than the direct link between impairment and income.

Figure 4



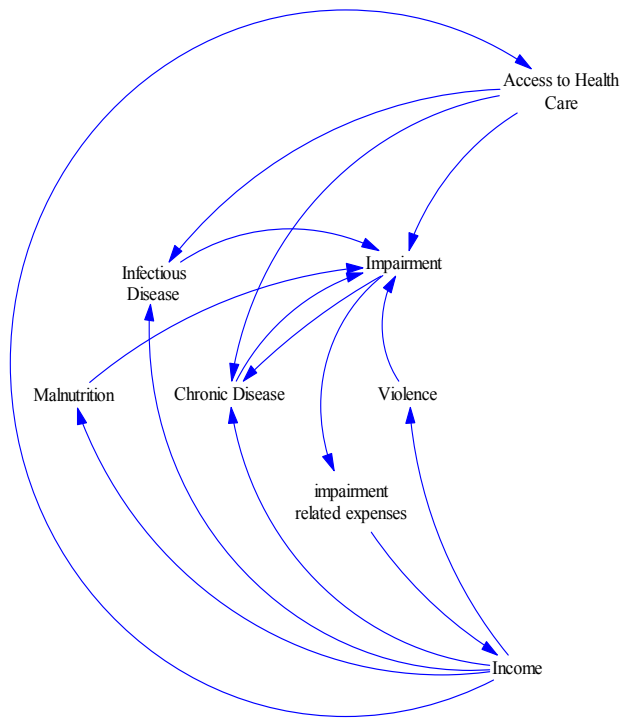
In Figure 5, prejudice and exclusion are both removed from the model, which is necessary in order to remove exclusion, as it is impossible to completely eliminate exclusion without first eliminating prejudice. The removal of exclusion and prejudice eradicates the causal basis for all of the feedback loops between employment, education, disabling environment, civil rights enforcement, etc. After their removal, the only link that remains between impairment and income is through medical expenses.

Without prejudice and exclusion, therefore, impairment appears to have no other links to disability and poverty. This does not mean that there are no more feedback loops in the system. Income still affects the determinants of impairment: violence, infectious disease, malnutrition, and chronic disease.<sup>1</sup> For example, income affects whether one has enough money to buy mosquito netting to prevent malaria, enough food to prevent malnutrition, or enough money to live in a neighborhood safe from violence. Income also affects access to health care, which in turn affects the risk of impairment, disease, malnutrition, etc. However, for impairment to actually effect income along these pathways, impairment related expenses must be substantial – substantial enough to force the impaired person into poverty. Only if poverty occurs can impairment create a cycle of cumulative causation.

<sup>1</sup> These causes of impairment are taken from UNESCO 1995, where the causes of disability were divided into six distinct categories: malnutrition (20%), non-infectious disease (20%), congenital disease (20%), violence/accidents (16%), infectious disease (11%), and aging (13%).

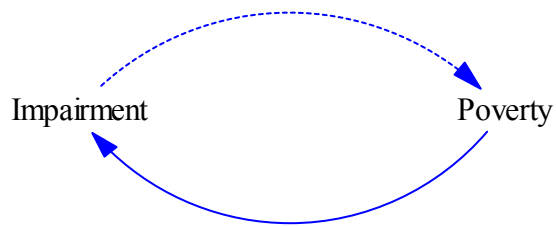


Figure 5



Conceptually, the model is left with only one feedback loop between impairment and poverty. In Figure 6, the bold causal arrow between poverty and impairment represents the connections between income, the determinants of impairment, and impairment itself. The dashed arrow between impairment and poverty represents the weak causal link between the medical costs of treatment and overall income. It is a model that requires implausibly high medical expenditures to create an actual feedback situation.

Figure 6



CONCLUSION:

This paper has developed a theory of the connections between poverty and disability that suggests that societal factors such as prejudice and discrimination are more significant in the fight against poverty and disability than so called economic factors. The evidence from the Delphi survey and the structure of the aggregate system model suggest that exclusion is the main link between impairment and disability, and between disability and

poverty. Not only does the model indicate the power of exclusion to create both poverty and disability, it also provides insights on which to base potential policy recommendations. With the elimination of prejudice and exclusion from the system, the model illustrates the potential effects of a policy of inclusion and empowerment, suggesting that empowerment and inclusion programs can sever the causal links between poverty and disability, and thus defeat the cycle of cumulative causation. Oxfam International supports this finding, stating that, “because disability and poverty are inextricably linked, poverty can never be eradicated until disabled people enjoy equal rights with non-disabled people” (Lee 1999, 13).

Facilitating empowerment, by making state and social institutions more responsive to the needs of the disabled, is key to reducing poverty (World Bank 2001, 3). Increasing equality for people with disabilities and changing society’s attitudes toward disability can act as a catalyst to propagate change throughout the entire poverty/disability system. If the model developed in this article is accurate, then without the element of prejudice, civil rights enforcement would improve, in turn improving access to health care and other public services, worker safety, wages, and employment opportunities, triggering a cascade of subsequent improvements in life expectancy, tax base, income, etc., which would all feedback on each other, further reinforcing the initial change. Inclusion and anti-discrimination programs can, therefore, simultaneously reduce both disability and poverty.

The inclusion of people with disabilities in mainstream society would also provide this previously excluded population with input into the future design of their social and physical environments, which could lead to the eventual removal of all unnecessarily disabling environments. In such a situation, in which people who experience impairments no longer have to face unnecessarily inhospitable environments, disability itself can be abolished.

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